Weather Bureau Office, the former for his assistance in tabulating the data, and the latter for checking and general criticism of the manuscript.

The rain-bearing winds at Knoxville, Tenn., 1916–35, inclusive

Direction	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Annual
SPRING									
Prevailing wind (percent)	14	18	7	3	9	31	11	7	------
Prevailing rain-wind (percent)	12	20	9	4	11	25	10	9	27
Total amount of rain (percent)	11	19	9	6	11	24	11	9	27
Average hourly rate (inches)	.07	.07	.08	.10	.08	.07	.08	.07	.08
Ratio of rain-hours to wind-hours (hours per 100 hours)	6.5	8.5	9.0	11.7	9.8	6.1	6.9	10.3	7.7
SUMMER									
Prevailing wind (percent)	13	19	9	4	11	30	10	4	------
Prevailing rain-wind (percent)	8	14	9	5	14	32	12	6	17
Total amount of rain (percent)	11	15	8	8	13	25	11	9	28
Average hourly rate (inches)	.15	.13	.11	.20	.11	.10	.12	.18	.12
Ratio of rain-hours to wind-hours (hours per 100 hours)	3.3	3.7	5.3	6.5	6.5	5.4	6.0	6.7	5.7
AUTUMN									
Prevailing wind (percent)	14	28	10	4	8	21	9	6	------
Prevailing rain-wind (percent)	10	24	10	5	8	24	12	7	19

The rain-bearing winds at Knoxville, Tenn., 1916–35, inclusive—Con.

Direction	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Annual
AUTUMN—continued									
Total amount of rain (percent)	9	21	11	4	9	25	14	7	18
Average hourly rate (inches)	.07	.06	.08	.07	.08	.08	.09	.07	.07
Ratio of rain-hours to wind-hours (hours per 100 hours)	3.8	4.8	5.4	6.4	6.0	6.6	7.4	6.8	5.6
WINTER									
Prevailing wind (percent)	14	24	7	2	6	30	10	7	------
Prevailing rain-wind (percent)	13	31	8	2	8	21	10	7	37
Total amount of rain (percent)	13	32	9	2	9	19	9	7	27
Average hourly rate (inches)	.06	.06	.06	.06	.06	.05	.06	.06	.06
Ratio of rain-hours to wind hours (hours per 100 hours)	9.5	13.6	11.0	11.6	15.0	7.5	9.7	11.2	10.5
YEAR									
Prevailing wind (percent)	14	22	9	3	8	28	10	6	------
Prevailing rain-wind (percent)	11	24	9	4	10	25	10	7	100
Total amount of rain (percent)	11	22	9	5	11	23	11	8	100
Average hourly rate (inches)	.08	.07	.08	.10	.08	.07	.08	.08	.08
Ratio of rain-hours to wind-hours (hours per 100 hour)	6.2	7.7	7.4	8.5	8.7	6.4	7.5	9.0	7.2

ANALYSES OF RAINS AND SNOWS AT MOUNT VERNON, IOWA, 1936–1937

By NICHOLAS KNIGHT

[Cornell College, Mount Vernon, Iowa, June 1937]

The analysis of the rains and snows at Mount Vernon, Iowa, was continued during 1936 and 1937. There were 36 samples of rain and only 6 samples of snow. We considered that 1 inch of rain on an acre weighs 226,875 pounds.

The snowstorm of December 5, 1936, was preceded by several weeks of drought, a possible explanation of the high chlorine and nitrate content of the snow. The storm of January 2, 1937, was mostly rain mixed with some snow, while the storm of January 6 contained some sleet; and on January 8 a considerable quantity of rain came down with the snow. The precipitation of January 20 was rain and sleet. The large amounts of chlorine in the precipitation of February 17 and 20 seemed to be due to the duststorms of that period. The rain of April 30 was accompanied by severe thunder and lightning. The storm of May 4 was accompanied by thunder and lightning and there was considerable hail. There was also much thunder and lightning with the rain of May 11.

The rains and snows of Mount Vernon, Iowa, 1936–37

PARTS PER MILLION

No.	Date 1936–37	Precipitation: Amount	Precipitation: Kind	Chlorine	Free NH_3	Alb. NH_3	N in nitrate	N in nitrite	Sulphate
		Inches							
1	June 14	0.12	Rain	3.55	0.64	0.36	1.0	0.01	0.0005
2	June 16	.40	---do	3.55	.28	.48	1.5	.015	.0003
3	Oct. 20	.33	---do	2.15	.42	.20	.9	.012	.0002
4	Nov. 1	.80	---do	5.00	.45	.60	.15	.020	.00
5	Nov. 2	.40	---do	3.50	.32	.45	.10	.03	.0004

The rains and snows of Mount Vernon, Iowa, 1936–37—Continued

PARTS PER MILLION—Continued

No.	Date 1936–37	Precipitation: Amount	Precipitation: Kind	Chlorine	Free NH_3	Alb. NH_3	N in nitrate	N in nitrite	Sulphate
		Inches							
6	Nov. 8	2.00	Snow	2.13	0.60	0.40	0.13	0.03	0.0003
7	Dec. 5	6.00	---do	7.10	.36	.40	1.00	.02	Trace
8	Dec. 26	.75	Rain	3.55	.136	.50	.9	.03	.00
9	Dec. 30	.85	---do	3.25	.40	.55	1.00	.04	.00
10	Jan. 2	.40	---do	3.60	.08	.36	1.03	.02	Trace
11	Jan. 6	.20	---do	3.55	.24	.45	1.50	.04	.02
12	Jan. 8	6.00	Snow	3.40	.056	.40	0.8	.01	.00
13	Jan. 20	.50	Rain	2.80	.112	.45	.8	.02	.0006
14	Jan. 30	.75	---do	4.00	.056	.40	.9	.15	.012
15	Feb. 15	3.00	Snow	3.50	.35	.45	1.5	.02	Trace
16	Feb. 17	3.00	---do	10.00	.28	.42	2.00	.015	Trace
17	Feb. 19	.33	Rain	11.15	.02	.50	1.7	.020	.0025
18	Feb. 20	1.00	---do	3.50	.056	.43	1.0	.018	.0011
19	Mar. 4	.67	---do	3.60	.06	.36	1.2	.020	.00
20	Mar. 20	4.00	Snow	3.55	.08	.42	2.3	.03	.0039
21	Mar. 22	.10	Rain	3.55	.24	.46	2.2	.055	.28
22	Mar. 24	.60	---do	3.60	.20	.40	.6	.025	.008
23	Apr. 2	4.00	Snow	3.00	.056	.42	.5	.015	.008
24	Apr. 3	1.00	Rain	7.00	.136	.45	.136	.025	.010
25	Apr. 5	.30	---do	3.25	.25	.20	.4	.02	.007
26	Apr. 7	.25	---do	3.50	.40	.45	.6	.0175	.005
27	Apr. 15	.17	---do	1.42	.48	.20	.75	.05	.004
28	Apr. 21	.80	---do	7.10	.42	.35	.70	.04	.0045
29	Apr. 24	.20	---do	3.50	.35	.48	.75	.055	.0044
30	Apr. 25	.15	---do	4.00	.36	.20	.5	.035	.006
31	Apr. 28	.20	---do	2.9	.136	.45	.7	.053	.004
32	Apr. 29	.60	---do	2.13	.24	.44	1.2	.036	.0008
33	May 2	1.00	---do	1.42	.40	.32	.3	.04	.0006
34	May 3	.30	---do	1.05	.18	.36	.63	.025	.00
35	May 4	.33	---do	0.75	.28	.28	.40	.045	.0044
36	May 11	.60	---do	2.75	.32	.20	.70	.05	.0007
37	May 15	.20	---do	0.71	.32	.24	.80	.05	.0044
38	May 18	.20	---do	2.00	.35	.24	1.1	.065	.0038
39	May 20	.33	---do	0.9	.04	.42	.45	.06	.003
40	May 27	1.25	---do	0.7	.136	.20	.72	.074	.002
41	June 2	.17	---do	3.55	.40	.42	.68	.07	.003
42	June 5	.38	---do	3.00	.36	.35	.65	.04	.001

The rains and snows of Mount Vernon, Iowa, 1936–37—Continued

POUNDS PER ACRE
[226,875 pounds per acre=1 inch]

No.	Date 1936-37	Precipitation		Chlorine	Free NH_3	Alb. NH_3	N in nitrate	N in nitrite	Sulphate
		Amount	Kind						
		Inches							
1	June 14	0.12	Rain	0.96	0.017	0.01	0.23	0.003	0.00001
2	June 16	.40	do	.32	.025	.04	.135	.0014	.00003
3	Oct. 20	.33	do	.163	.032	.015	.07	.0009	.00002
4	Nov. 1	.80	do	.92	.083	.11	.03	.0037	.00
5	Nov. 2	.40	do	.319	.029	.041	.009	.0027	.00004
6	Nov. 8	2.00	Snow	.081	.028	.015	.005	.001	.00001
7	Dec. 5	6.00	do	.81	.04	.046	.114	.0023	Trace
8	Dec. 26	.75	Rain	.6	.023	.085	.15	.005	.00
9	Dec. 30	.85	do	.63	.077	.106	.193	.0077	.00
10	Jan. 2	.40	do	.33	.0073	.033	.094	.0018	Trace
11	Jan. 6	.20	do	.135	.0091	.017	.057	.0015	.0023
12	Jan. 8	6.00	Snow	.384	.0063	.045	.09	.0011	.00
13	Jan. 20	.50	Rain	.0319	.013	.051	.091	.022	.00007
14	Jan. 30	.75	do	.68	.010	.068	.15	.0026	.002
15	Feb. 15	3.00	Snow	.20	.020	.026	.086	.001	Trace
16	Feb. 17	3.00	do	.57	.016	.024	.114	.0009	.0001
17	Feb. 19	.33	Rain	.86	.0015	.038	.129	.00015	.0002
18	Feb. 20	1.00	do	.79	.0127	.098	.227	.0041	.0002
19	Mar. 4	.67	do	.61	.0102	.0612	.206	.0034	.00
20	Mar. 20	4.00	Snow	.27	.0061	.032	.17	.0023	.0003
21	Mar. 22	.10	Rain	.08	.005	.01	.05	.012	.04
22	Mar. 24	.60	do	.05	.028	.056	.084	.0035	.0001

The rains and snows of Mount Vernon, Iowa, 1936–37—Continued

POUNDS PER ACRE—Continued
[226,875 pounds per acre=1 inch]

No.	Date 1936-37	Precipitation		Chlorine	Free NH_3	Alb. NH_3	N in nitrate	N in nitrite	Sulphate
		Amount	Kind						
		Inches							
23	Apr. 2	4.00	Snow	0.227	0.0082	0.0034	0.038	0.0015	0.0006
24	Apr. 3	1.00	Rain	1.59	.0308	.1021	.0908	.0045	.0020
25	Apr. 5	.30	do	.22	.017	.014	.028	.0014	.0005
26	Apr. 7	.25	do	.20	.023	.026	.0342	.0010	.0003
27	Apr. 15	.17	do	.054	.018	.0076	.0029	.002	.0002
28	Apr. 21	.80	do	1.278	.0756	.063	.126	.0072	.0008
29	Apr. 24	.20	do	.158	.0158	.0216	.0338	.0025	.0005
30	Apr. 25	.15	do	.136	.0122	.0068	.017	.0012	.0002
31	Apr. 28	.20	do	.13	.006	.02	.0315	.0024	.0002
32	Apr. 29	.60	do	.298	.0336	.0616	.168	.005	.0001
33	May 2	1.00	do	.0322	.0908	.0726	.00681	.0091	.0002
34	May 3	.30	do	.079	.0136	.0272	.0476	.0019	.00
35	May 4	.33	do	.0567	.0211	.024	.0302	.0034	.0003
36	May 11	.60	do	.374	.0435	.0272	.0952	.0068	.0009
37	May 15	.20	do	.032	.0145	.011	.036	.0023	.0002
38	May 18	.20	do	.09	.0158	.0108	.0495	.0029	.0003
39	May 20	.33	do	.0684	.0003	.0319	.0038	.0037	.0002
40	May 27	1.25	do	.1985	.0386	.0567	.2141	.021	.0006
41	June 2	.17	do	.1349	.0152	.01596	.0258	.0027	.0001
42	June 5	.38	do	.219	.0262	.0255	.0474	.0029	.00008

NOTES AND REVIEWS

HANN-SÜRING. *Lehrbuch der Meteorologie.* 5te Aufl. Erste Lieferung. Leipzig, 1937.

This initial section of a new edition of Hann comprises pages 1–96 inclusive, and covers roughly the same ground as pages 1–47 and 780–795 of the fourth edition, which was completed in 1926. Extensive changes from the previous edition have been made: The division of the material into parts, chapters, etc., has been altered; much of the material has been rearranged and rewritten; and many additions have been made. References to literature are now collected at the ends of the sections, instead of being given in footnotes.

The first section, on the atmosphere in general, was prepared by F. W. Paul Götz. It includes a summary of our present knowledge of the phenomena and physical conditions in the extreme upper atmosphere—chemical composition, ozone distribution, ionosphere, etc.

The second section is occupied with the subject of solar, sky, and terrestrial radiation, insolation, and atmospheric absorption and turbidity. The Lieferung also includes the opening part of the third section, on temperature, and contains the discussion of the mathematical treatment of periodic phenomena that was placed in VI. Buch in previous editions.—*Edgar W. Woolard.*

BIBLIOGRAPHY

[RICHMOND T. ZOCH, *in Charge of Library*]

By AMY D. PUTNAM

RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

Alling, Jeremiah.
A register of the weather, or An account of the several rains, snow-storms, depth of each snow,—hail and thunder . . . for the last twenty-five years, ending March 31, 1810. From observations, taken most of the time in Hamden, near New Haven, in Connecticut. New Haven. 1810. 84 p. 23½ cm. (Pages 81 to 84 carry register to March 1811.)

Burkholder, Paul Rufus, & Johnston, Earl S.
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Weather rambles. Baltimore. 1937. 265 p. illus., diagrs. 19½ cm.

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Kinemathcal and dynamical properties of the field of pressure with application to weather forecasting. Oslo. 1933. 92 p. diagrs. 31 cm. (Geofysiske publikasjoner. v. x, no. 2.) Bibliography: p. 92.

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Air conditioning in the home; what air conditioning includes, its advantages, the fundamental principles of design, the installation and operation of air-conditioning systems, specific examples of heating and cooling calculations, designing data, and general information of importance both to engineers and home owners. 1st ed. New York & London. [°1937.] 296 p. illus., tabs., diagrs. 23½ cm.